

(12) NACH DEM VERTRAG ÜBER DIE INTERNATIONALE ZUSAMMENARBEIT AUF DEM GEBIET DES
PATENTWESENS (PCT) VERÖFFENTLICHTE INTERNATIONALE ANMELDUNG

(19) Weltorganisation für geistiges Eigentum
Internationales Büro



(43) Internationales Veröffentlichungsdatum
10. Mai 2002 (10.05.2002)

PCT

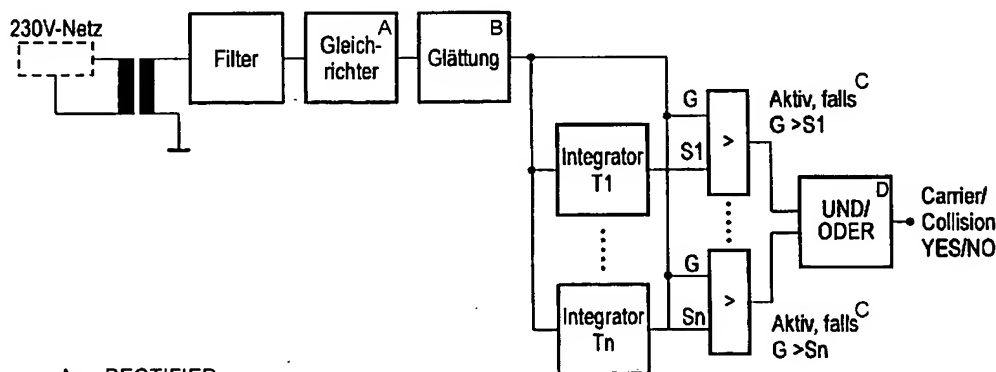
(10) Internationale Veröffentlichungsnummer
WO 02/37712 A1

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(30) Angaben zur Priorität: **100 53 948.3** **31. Oktober 2000 (31.10.2000)** **DE** (81) Bestimmungsstaat (national): **US**.
(71) Anmelder (für alle Bestimmungsstaaten mit Ausnahme von (84) Bestimmungsstaaten (regional): **europäisches Patent (AT,
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[Fortsetzung auf der nächsten Seite]

(54) Title: METHOD FOR AVOIDING COMMUNICATION COLLISIONS BETWEEN CO-EXISTING PLC SYSTEMS ON US-
ING A PHYSICAL TRANSMISSION MEDIUM COMMON TO ALL PLC SYSTEMS AND ARRANGEMENT FOR CARRYING
OUT SAID METHOD

(54) Bezeichnung: VERFAHREN ZUM VERMEIDEN VON KOMMUNIKATIONS-KOLLISIONEN ZWISCHEN CO-EXISTIE-
RENDEN PLC-SYSTEMEN BEI DER NUTZUNG EINES ALLEN PLC-SYSTEMEN GEMEINSAMEN PHYSIKALISCHEN
ÜBERTRAGUNGSMEDIUMS UND ANORDNUNG ZUR DURCHFÜHRUNG DES VERFAHRENS



A ... RECTIFIER
B ... SMOOTHING
C ... ACTIVE WHEN $G > S1$
D ... AND/OR

(57) Abstract: An improved method for avoiding communication collisions between co-existing PLC systems on using a physical transmission medium common to all PLC systems and arrangement for carrying out said method with regard to the reliability of the overall result are disclosed, the main principle of which is that the decision of whether or not a physical transmission line is active or not is based on a mean noise level (G) and at least one single threshold value (e.g. S1) which matches the level of interference occurring in the physical transmission channel. In a further improvement several such threshold values (S1 to Sn) are provided, which are combined to give an overall decision signal by means of a corresponding logical combination circuit. The individual, intermediate determined threshold value decisions can have a priority assigned by the logical connection circuit.

[Fortsetzung auf der nächsten Seite]

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Claims

1. Method for avoiding communication collisions between co-
5 existing PLC systems on using physical transmission medium common
to all PLC systems, the method steps of which include the
determination of an average noise level (G) on the physical
transmission medium and the classification of the physical
transmission medium as busy or free depending on whether a
10 specified threshold value (S) for the noise level is overshoot or
undershot by the determined average noise level (G), characterized
in that the threshold value (e.g. S1) for the noise level is
varyingly determined depending on changes over time in the
determined average noise level (G) in parallel and integrally at
15 least one single time with a respective assigned time constant
(e.g. T1) and such an amplification factor assigned in each case,
that in the steady state and in a situation in which a noise level
is exclusively present the determined varying threshold value
(e.g. S1) is greater than the determined average noise level (G),
20 that the varying threshold values (e.g. S1 up to Sn) determined in
this way in each case are each compared with the determined
average noise level (G) and an active signal is generated in each
case depending on the results of the particular comparison, if the
comparison shows that the determined average noise level (G) is
25 greater than the varying threshold value (e.g. S1) in comparison
with it in each case, and that in a logic element that takes
account of the actual significance of the particular individual
determined active signal all the determined active signals are
used to generate an overall decision signal for indication of the
30 busy or not busy state of the physical transmission medium.

2. Method in accordance with Claim 1, characterized in that an
overall decision signal indicating that the physical transmission
medium is not busy is generated in the form of an active signal if
35 a predetermined combination of existing active signals is
detected.

3. Method in accordance with Claim 1 or 2, characterized in that the time constants (e.g. T1) for determining the varying threshold values (e.g. S1) are matched to these different interference signals in at least one selection of the possible different
5 interference signals on the physical transmission medium.

4. Arrangement for carrying out the method in accordance with one of the preceding claims with means for determining an average noise level (G) on the physical transmission medium, characterized
10 in that at least one parallel medium is provided in each case for determination of a varying threshold value (e.g. S1) relative to changes over time of the determined average noise level (G) and to a respective assigned time constant (e.g. T1), that in each case for a means for determining a varying threshold value (e.g. S1) a
15 means is provided for comparing the determined varying threshold value (e.g. S1) with the determined average noise level (G) and for the generation of an active signal if the determined average noise level (G) is greater than the relevant determined varying threshold value (e.g. S1), and that means are provided for a logic
20 combination of the respective determined active signals relative to a respective assigned significance and for the generation of an overall decision signal for indicating whether or not the physical transmission medium is busy.

25 5. Arrangement in accordance with Claim 4, characterized in that the means for generating the overall decision signal are designed in such a way that the output of an active or inactive overall decision signal is at least controlled essentially in each case by the same subcomponents.

30 6. Arrangement in accordance with Claim 4, characterized in that the means for generating the overall decision signal are designed in such a way that output of an active or inactive overall decision signal is at least controlled essentially in each case by
35 a separate group of subcomponents.

Abstract

Method for avoiding communication collisions between co-existing PLC systems on using a physical transmission medium common to all
5 PLC systems and arrangement for carrying out said method

An improved method for avoiding communication collisions between co-existing PLC systems on using a physical transmission medium common to all PLC systems and arrangement for carrying out said
10 method with regard to the reliability of the overall result are disclosed, the main principle of which is that the decision of whether or not a physical transmission line is active or not is based on a mean noise level (G) and at least one single threshold value (e.g. S1) which matches the level of interference occurring
15 in the physical transmission channel. In a further improvement several such threshold values (S1 to Sn) are provided, which are combined to give an overall decision signal by means of a corresponding logical combination circuit. The individual, intermediate determined threshold value decisions can have a
20 priority assigned by the logical connection circuit.

Figure

